

# Claims

- [c1] 1. A method for the preparation of a mixture of fatty acid /crude lecithin calcium salt matrix product comprising: forming an admixture of reactive ingredients derived from products of the alkali, caustic or wet refining processing of vegetable oils and consisting of (a) C.sub.10 -C.sub.22 or higher fatty acid mixture having greater than about 30 weight% of the C.sub.10 -C.sub.22 fatty acid content in the form of mixed vegetable fatty acids and/or fatty acid glycerides and(b) from about 10 to about 30% of the total admixture weight of calcium oxide, and(c) 10 to about 45% crude lecithin. Water is then added to the admixture in an amount between about 10% and about 20% by weight relative to the amount of calcium oxide.
2. The composition of claim 1 wherein said crude lecithin phospholipids is non-hydratable whereby said crude lecithin phospholipids pass more or less intact through the rumen into the intestine.
3. The composition of claim 1, further comprising phosphatidylcholine in said crude lecithin composition in an amount effective to disintegrate said composition in the post-ruminal digestive tract.
4. The composition according to claim 1 wherein the amount of crude lecithin is between about 10% and 45% by weight of

the total composition.

5. Heating said admixture to a temperature between about 150.degree. and 250.degree. C., so that said fatty acid glycerides saponify to form fatty acid calcium salts.

6. The method of claim 1, further comprising the step of cooling using a novel evaporative cooling technique, said admixture and forming a solid, rumen protected free-flowing and granular fatty acid /crude lecithin calcium salt matrix product.

7. The method of claim 1, wherein said C.sub.10 -C.sub.22 or higher mixed vegetable fatty acids and/or fatty acid glycerides content between about 30 and about 100 weight%.

8. The method of claim 1, wherein said C.sub.10 -C.sub.22 or higher fatty acid/triglyceride and crude lecithin mixture is derived from a feedstock selected from the vegetable oil group consisting of soybean, canola, palm, rapeseed, corn and/or cotton.

9. The method of claim 1, wherein said admixture contains between about 10% and about 30% by weight of calcium oxide.

10. The method of claim 1, wherein said temperature is between about 160 and about 260.degree. C.

11. The method of claim 1, wherein the term crude lecithin is mixed lecithin phospholipids from the alkali, caustic or wet refining processing of vegetable oils and refers to phosphatidyl

choline (PC). However, as used by commercial suppliers, the term crude lecithin (CL) refers to a product derived from vegetable oils, especially soybean oil. In addition to phosphatidyl choline, crude lecithin derived from vegetable oil includes phosphatidyl ethanolamine (PE), phosphatidyl inositol (PI), phosphatidic acid (PA), phosphatidyl serine (PS), cyclolipids, and other components such as free sugars, metals and free fatty acids. Because they contain several phosphatidyl derivatives, commercial lecithins are often referred to as phosphatides or phosphatide concentrates. Other synonymous terms for phosphatide concentrates include wet gums or wet lecithin.

12. The method of claim 1, wherein said feedstock (mixture of fatty acid/triglycerides and crude lecithin) originates from the alkali, caustic or wet refining processing of vegetable oils of oil seed stocks. "Wet processing" referenced by US Patents employing conventional acidic aqueous solutions of selected mineral acids are incorporated into the oil by high/low shear forces for emulsification purposes and further demineralized water washes and subsequent separation techniques are used to remove both hydratable phosphatides (HPs) and non-hydratable phosphatides (NHPs). And "caustic and alkali" refining methods widely used today in the oil seed industry and being a well known art.

13. The method of claim 12, wherein said feedstock (mixture

of fatty acid/triglycerides and crude lecithin) originates from the alkali, caustic or "wet refining" processing of vegetable oils seed stocks. Some oil seed processors continue the processing by drying the mixed triglyceride, fatty acid and lecithin mixture producing a "dried mixture" suitable for conversion to a solid, rumen protected free-flowing and granular fatty acid /crude lecithin calcium salt matrix product.

14. The method of claim 12, wherein said vegetable oil seed derived feed stock is devoid of animal derived products or byproducts capable of possible transmission of BSE and providing conversion to a suitable feed ingredient with rumen bypass qualities.

15. The method of claim 1, wherein the reaction is undertaken in an inert nitrogen atmosphere to prevent formation of unwanted degradation byproducts that produce bitter taste and offensive odor.

16. The method of claim 1, wherein the produced rumen protected free-flowing and granular fatty acid /crude lecithin calcium salt matrix product contains and is a source of ruminally protected choline (RPC).

17. The method of claim 1, wherein said admixture further comprises a biologically active material or other nutritionally beneficial materials compatible with the process.

18. The method of claim 17, wherein said biologically active material is an amino acid.